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**15-110 Fall 2018 Quiz 6**

**\* 20 minutes \* No calculators, no notes, no books, no computers. \* Show your work when possible!**

1. **Code Tracing [10 pts]** Indicate what the following program prints. Place your answer in the box.

```
def ct1(L):
    rows = len(L)
    cols = len(L[0])
    M = copy.deepcopy(L)
    for row in range(rows):
        for col in range(cols):
            d = L[row][col] % 2
            M[row][col] += d
            M[row][col] *= d
    return M
L = [ [11, 22, 33],
      [44, 55, 66] ]
print(ct1(L))
```



2. **Code Tracing [10 pts]** Indicate what the following program prints. Place your answer in the box.

```
def ct2(L, m):
    rows = len(L)
    cols = len(L[0])
    result = [ ]
    for row in range(rows):
        for col in range(cols):
            if (L[row][col] == m):
                result.append([row, col])
                m += 1
    return result
L = [ [ 1, 2, 3, 4 ],
      [ 2, 3, 4, 5 ],
      [ 8, 7, 6, 5 ] ]
print(ct2(L, 4))
```



3. **Free Response: getCol(L, c) [40 points]**

Write the function `getCol(L, c)` that takes a 2d list `L` and a column `c` and returns a 1d list of the given column of `L`, or `None` if no such column exists. For example, if `L = [ [ 1, 2, 3], [4, 5, 6] ]`, then `getCol(L, 0)` returns `[1, 4]` and `getCol(L, 2)` returns `[3, 6]`, and `getCol(L, 3)` returns `None`.

4. **Free Response: nycMinLo(minHi) [40 points]**

Say that you have a file, KNYC.csv, that contains daily weather data over a 2-year stretch in New York City. Each row represents one day in that period. The first few columns of each row are:

- \* date

- \* average\_temp

- \* min\_temp

- \* max\_temp

With this in mind, write the function `nycMinLo(minHi)` that takes one parameter, `minHi`, which is an integer, and returns the lowest minimum temperature (`min_temp`) among all the days on which the max temperature (`max_temp`) was at least `minHi`. For example, `nycMinLo(80)` returns 51, which means among all the days with a `max_temp` of 80 or higher, the lowest `min_temp` on those days was 51. If there are no such days, the function returns `None`. So for example, `nycMinLo(180)` returns `None`, since no day was anywhere near that hot.

Note: you may call `readCsvFile()` in your code without writing it.

5. **Bonus/Optional: Code Tracing [2.5 pts each]:**

Indicate what the following program prints. Place your answer in the box.

```
def bonusCt1(n):  
    r = [ ]  
    for m in range(n, 100, -3):  
        r.append(list(range(len(r),m,50)))  
    return max(r[1:][0])  
print(bonusCt1(109))
```



Indicate what the following program prints. Place your answer in the box.

```
def bonusCt2(r, L):  
    for i in range(0, len(L)*len(L[0]), 4):  
        r += L[i%len(L)][i//len(L)]  
    return r  
print(bonusCt2(20, [list(range(20))*20]))
```

